

## SPHAGNUM RECURVUM<sup>1</sup>

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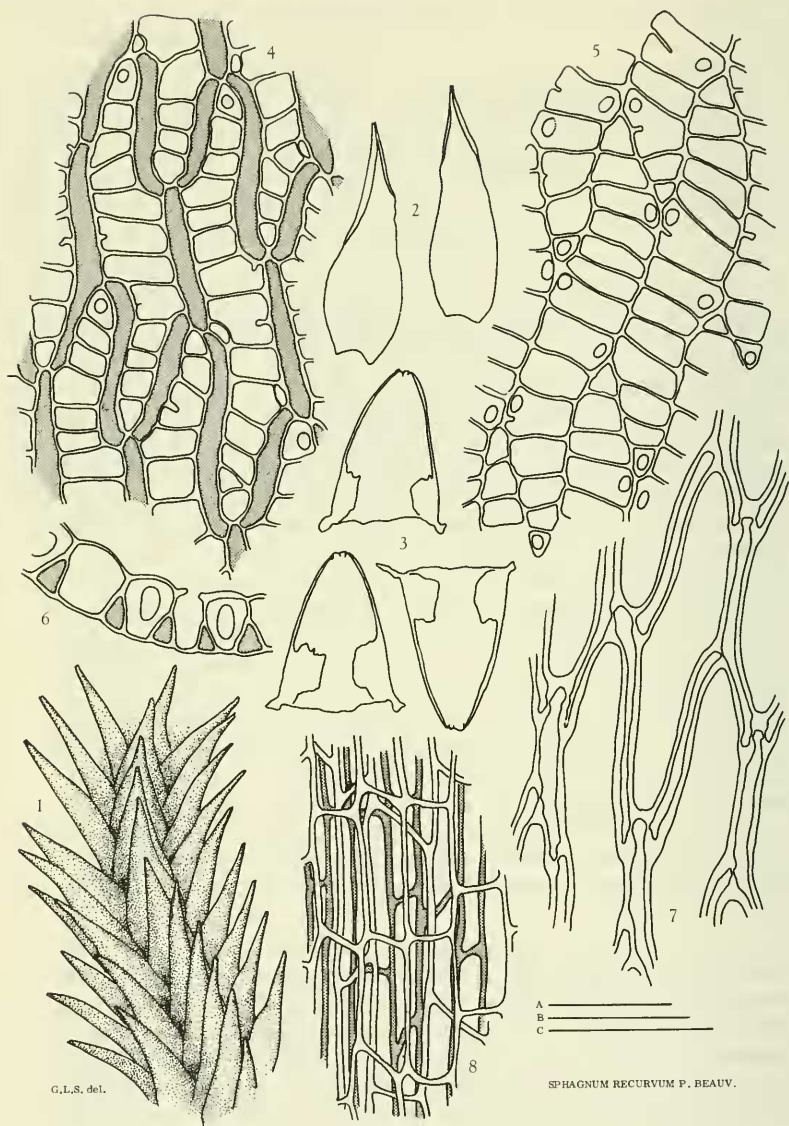
During a brief visit to Paris (PC) in the spring of 1974, I examined the Polytrichaceae and Sphagnum contained in a bundle of specimens labelled "Muscinéés de l'Amérique du Nord de l'herbier de L.C. Richard. Types du Flora boreali-americana." This portfolio of specimens has since been studied critically by Dr. Geneva Sayre, and authenticated as Richard's North American bryophyte herbarium, arranged by F.A. Camus (1852-1922), its last private owner (cf Sayre, 1976, for details). Richard's original labels are intact. The herbarium contains several specimens of North American mosses from Palisot de Beauvois, including one which is evidently an isotype of Sphagnum recurvum Beauv., published in his Prodrome (1805). An annotation on the specimen by Camus says that the specimen was given by Palisot to Richard shortly after the publication of the Flora boreali-americana of Michaux in 1803. The label on the specimen reads "S. acutifolium Hedw. / Carolina m. -" The type of S. recurvum was collected in South Carolina (Carolina meridionalis) by Louis A.G. Bosc, as stated in the protologue. Bosc was French vice-consul in Carolina from 1798 to 1800 (Burdet, 1972). Unfortunately, the label does not bear the name Sphagnum recurvum or the name of the collector. A branch, several stem leaves, and a fragment of the stem cortex were removed from the specimen for careful study at a later date. Permanent slides prepared from this material have since been returned to PC.

The name Sphagnum recurvum has been in common use for over a century, but it has been used in different senses, and it would be particularly useful to have a specimen that could serve as the type. After due consideration of the nomenclatural consequences, which are discussed below, I have designated this specimen as the lectotype of Sphagnum recurvum. As treated by Andrews (1913), S. recurvum includes four closely related taxa which are recognized by most other

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sphagnologists as distinct species: Sphagnum fallax (H. Klinggr.) H. Klinggr. [= S. mucronatum (Russow) Zickendr., S. apiculatum H. Lindb.]; Sphagnum angustifolium (Russow) C. Jensen [= S. parvifolium (Sendtn.) Warnst.]; Sphagnum flexuosum Dozy & Molck. [= S. amblyphyllum (Russow) Zickendr.], and Sphagnum pulchricoma C. Müll. The nomenclature is that of Isoviita (1966). Andrews recognized S. angustifolium at the varietal level as S. recurvum var. tenue. All except S. pulchricoma are widely distributed boreal taxa. Those who have treated all four as species have usually associated the name S. recurvum with the "apiculatum" form (S. fallax; e.g. Warnstorf, 1911). Crum (1973, p. 32) treats the first three as S. recurvum var. recurvum, var. tenue, and var. amblyphyllum, respectively, but includes S. pulchricoma in his concept of the var. amblyphyllum (pers. comm.).

In his nomenclatural revision of the European Sphagna, Isoviita (1966, p. 242) suggests that the name Sphagnum recurvum probably applies to the exclusively American S. pulchricoma, and not to any European species. Andrus (1974) agrees that S. pulchricoma is the only recurvum-segregate likely to be collected in South Carolina. According to Andrus, S. pulchricoma is a species of the Atlantic and Gulf coastal plain, extending from New Jersey south to Florida and Louisiana, although recorded from as far north as Nova Scotia. The type of S. pulchricoma came from Brazil (Müller, 1848).

As the accompanying illustrations show (Figs. 1-8), the lectotype of Sphagnum recurvum belongs to the taxon currently known as S. pulchricoma C. Müll., which is characterized by 1) chlorophyll cells of the branch leaves well-included on the concave surface, 2) a fairly well-differentiated, 2-3-layered stem cortex, and 3) rather narrow, distinctly 5-ranked branch leaves. An example was distributed by Andrus and Vitt as Sphagnotheca Boreali-americana 21.

At least some of the South American specimens of Sphagnum pulchricoma at NY seem to be indistinguishable from the type of S. recurvum, including an authentic specimen from Brazil. This collection, from Itajahi (Pabst, s.n.), is cited as S. pulchricoma by

Sphagnum recurvum Beauv. 1, Portion of strong branch, with distinctly 5-ranked leaves; 2, Branch leaves; 3, Stem leaves; 4, Outer (convex) surface of branch leaf; 5, Inner (concave) surface of branch leaf, with chlorophyll-cells entirely included; 6, Cross-section of branch leaf; 7, Median cells of stem leaf; 8, Stem cortex, surface view. (Figs. 1-8 from the lectotype, PC). Fig. 1: A=1mm, Figs. 2, 3: B=1mm, Figs. 4-7: C=0.05mm, Fig. 8: C=0.1mm.

Müller in the supplement to his Synopsis Muscorum (1851). The type specimen of S. pulchricoma has not been examined.

The stem leaves of Sphagnum recurvum sens. strict. are similar to those of S. flexuosum. Andrus (1974) considers S. pulchricoma to be a good species, distinguished from S. flexuosum by its geographical distribution and by the characters listed above. Judging from my own experience with this handsome plant in the Pine Barrens of New Jersey and eastern Long Island, New York, I am convinced that our southern Atlantic and Gulf coastal plain S. recurvum (S. pulchricoma) is a distinct taxon, whatever rank one wishes to give it.

The typification of the name Sphagnum recurvum leaves the former "var. recurvum" (S. fallax) without a name at the varietal level. The basionym, S. cuspidatum var. fallax H. Klinggr., of 1872, cannot be used because of the existence of an S. recurvum var. fallax Warnst., of 1884, a synonym of S. obtusum (Warnstorf, 1911); von Klinggraeff's var. fallax was not transferred to S. recurvum until 1939. Isoviita (1966) indicates that he has seen "authentic material" of S. cuspidatum var. brevifolium Lindb. ex Braithw., of 1878, and that it is S. fallax. The date of Braithwaite's Sphagnaceae is generally given as 1880, but Dr. W. C. Steere owns a copy of an earlier printing of this work, which is dated 1878 on the title page. A glance at the Index Muscorum shows that there are many varietal epithets to choose from which might be S. fallax, but that var. brevifolium, which dates from 1878, is older by several years than any of these. I have not seen any of the specimens cited in the protologue; Braithwaite's Sphagnaceae Britannicae Exsiccatae 53 is missing from the set at NY, which is otherwise complete. Warnstorf (1911, p. 215), having seen the "original" of this variety, makes it a form of S. balticum, but Isoviita was presumably dealing with material from Lindberg's own herbarium, and this should be a more reliable indication of the correct use of the name. The stem leaf of var. brevifolium illustrated by Braithwaite (1878, Pl. 27, figs. 5, 5a), does not look like S. balticum.

Sphagnum recurvum var. amblyphyllum (Russow) Warnst., which is used by Crum (1973) for S. flexuosum, dates from 1890 as a varietal epithet. Isoviita lists no varieties as possible synonyms for this species. Of all the possible varietal epithets listed in the Index Muscorum, the oldest which can be applied to S. flexuosum, to the best of my knowledge, is S. recurvum var. majus (Ångstr. ex Warnst.) Warnst. of 1883, originally published by Warnstorf in 1881 as S. var - iabile var. intermedium f. majus Ångstr. "non Russow." I have examined Gravet's Sphagnotheca Belgica, 26 and 27 (FH!), which are the only specimens mentioned in the protologue of f. majus, and they are both S. flexuosum.

The following are what seem to be the correct names for the segregates of Sphagnum recurvum sens. lat. as species, as subspecies, and as varieties. The situation at the varietal level is unsettled, and only those names discussed above are included in the synonymy. A detailed consideration of this knotty problem is beyond the scope of this paper. At least, the name of S. angustifolium at the varietal level seems to be reasonably secure: the var. tenue H. Klinggr. has no rivals, as far as I know. The nomenclature at the subspecific level presents no such difficulties and has the added appeal of familiarity, since the epithets mucronatum, angustifolium and amblyphyllum have been, until recently, in general use for these taxa.

Sphagnum recurvum Beauv., Prodr. Aethéog. 88. 1805.

LECTOTYPE. "S. acutifolium Hedw. / Carolina m. -" Herb. Richard (PC!).

Sphagnum pentastichon Brid., Musc. Recent. Suppl. 1: 16. 1806.

Sphagnum pulchricoma C. Müll., Syn. 1: 102. 1848.

Sphagnum fallax (H. Klinggr.) H. Klinggr., Topogr. Fl. Westpr. 128. 1880.

Sphagnum recurvum subsp. mucronatum Russow, Sitz.-ber. Nat.-Ges. Dorpat 9: 109. 1889.

Sphagnum cuspidatum var. brevifolium Lindb. ex Braithw., Sphag. 84. 1878.

Sphagnum recurvum var. brevifolium (Lindb. ex Braithw.) Warnst., Flora 67: 608. 1884.

Sphagnum angustifolium (C. Jensen ex Russow) C. Jensen, Bih. Sv. Vet.-Akad. Handl. III. 16: 48. 1891.

Sphagnum recurvum subsp. angustifolium C. Jensen ex Russow Sitz.-ber. Nat.-Ges. Dorpat 9: 112. 1889.

Sphagnum recurvum var. tenue H. Klinggr., Schr. Phys.-ök. Ges. Königsb. 13: 5. 1872.

Sphagnum flexuosum Dozy & Molk., Prodr. Fl. Batav. 2(1): 76. 1851.

Sphagnum recurvum subsp. amblyphyllum Russow, Sitz.-ber. Nat.-Ges. Dorpat 9: 112. 1889.

Sphagnum variabile var. intermedium f. majus Ångstr. ex Warnst., Eur. Torfm. 65. 1881.

Sphagnum variabile var. majus (Ångstr. ex Warnst.) Warnst., Flora 65: 550. 1882.

Sphagnum recurvum var. majus (Ångstr. ex Warnst.) Warnst., Flora 66: 374. 1883.

The apex of the stem leaves of Sphagnum recurvum sens. strict. varies from narrow and almost entire to broad and lacerate, as a result of the progressive resorption of the walls of the hyaline cells. This variation can often be observed along the length of a single stem. The loss of the inner and outer cell walls allows the chlorophyll-cell mesh to spread, resulting in a broadly lacerate leaf apex.

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